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10/549,280	09/13/2005	Tomas Rosin	3952-92	2458

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NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON, VA 22203

EXAMINER	
GOLIGHTLY, ERIC WAYNE	
ART UNIT	PAPER NUMBER
1792	
MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/549,280	ROSIN, TOMAS	
	Examiner	Art Unit	
	Eric Golightly	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 August 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21-41* is/are pending in the application.

4a) Of the above claim(s) *27 and 28* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21-26 and 29-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *21-41* are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 September 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *29 August 2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 21-41 are pending. Applicant's arguments in the reply filed on 8/29/2008 concerning the restriction of the Group I and Group II claims is persuasive and that restriction is withdrawn. Applicant's election without traverse of species 3 (claim 29) is acknowledged. Claims 27 and 28 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Claims 21-26 and 29-41 are examined herein on the merits.

Drawings

2. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action.

The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claims 30, 38 and 39 are objected to because of the following informalities:

Claim 30 should include the word "a" before the word "variable". Claims 38 and 39 should include the word "further" between the comma and the word "comprising" in line 1 of both claims. Claim 38 should include the word "an" before the word "operation".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 21-26 and 29-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,996,951 to Archer et al. (hereinafter "Archer") in view of US 5,591,895 to Rigby (hereinafter "Rigby" and in further view of US 6,325,025 to Perrone (hereinafter "Perrone").

Regarding claim 21, Archer teaches a method of cleaning heat exchange surfaces of a heat exchange system (abstract), comprising the steps of: leading an exhaust stream by the heat exchange surfaces (col. 1, lines 14-23); and cleaning sequentially different parts of the heat exchange surfaces with cleaning equipment (col. 5, lines 51 and 52 and col. 7, line 55) having an operational status (col. 8, lines 25-30), wherein particles are released from the parts being cleaned (col. 7, lines 44-46)

Archer does not explicitly teach measuring the amount and/or type of released particles entrained with the exhaust gas stream so as to create particle measurement data and linking together and storing into an electronic memory the location information of the parts of the heat exchange surfaces being cleaned and the particle measurement data created during the cleaning so as to create information on the fouling on the heat exchange surfaces as a function of the location of the heat exchange surfaces.
Rigby teaches a method for detecting particles in a gas flow (abstract), including measuring the amount and/or type of released particles entrained with the exhaust gas stream so as to create particle measurement data (col. 2, lines 55-59). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the step of measuring the amount and/or type of released particles entrained with the exhaust gas stream so as to create particle measurement data as per the method of the Rigby teaching in the method as per the Archer teaching in order to enhance the control of unwanted particulate emissions, e.g., alarm level for continuously monitored pollutant.

Archer and Rigby do not explicitly teach linking together and storing into an electronic memory the location information of the parts of the heat exchange surfaces being cleaned and the particle measurement data created during the cleaning so as to create information on the fouling on the heat exchange surfaces as a function of the location of the heat exchange surfaces. Perrone teaches a sootblowing optimization method (abstract) and discloses linking together and storing in an electronic memory heat exchange parameters (col. 3, lines 54-64). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the step of linking together and storing into an electronic memory as per the method of the Perrone teaching the location information of the parts of the heat exchange surfaces being cleaned and the particle measurement data created during the cleaning as per the Archer/Rigby teachings so as to create information on the fouling on the heat exchange surfaces as a function of the location of the heat exchange surfaces since Archer and Rigby teach determining information on the fouling on the heat exchange surfaces as a function of the location of the heat exchange surfaces (Archer at col. 3, lines 46-68) and the linking data together and storing it in an electronic memory, e.g., in a database, is known and convenient, and would enhance operator ability to easily track and project the cleaning requirements of different parts and the historical effectiveness of the parts' respective cleaning operations.

Regarding claim 22, Archer, Rigby and Perrone disclose storing the operation parameter status into the electronic memory (Archer at Fig. 3, ref. 4 and 10 and col. 7, line 54-57 and col. 8, lines 10-14 and Perrone at col. 3, lines 54 and 55), and the skilled

artisan would have found obvious the stop of linking the operation parameter status together with the location information of the part being cleaned and the particle measurement data created during the cleaning of the part in order to since Archer, Rigby and Perrone disclose the importance of linking together the heat exchange operation parameters to enhance optimization analysis, including cleaning (Perrone at col. 3, lines 51 to col. 4, line 16)..

Regarding claim 23, Archer, Rigby and Perrone disclose using an operation parameter status which comprises location information of the cleaning equipment (Archer at col. 3, lines 6-9 and 46-66), operational status of the cleaning equipment (Archer at Fig. 3, ref. 4 and col. 7, line 54-57) and effect of the cleaning equipment (Archer at Fig. 3, ref. 10 and col. 8, lines 10-14).

.Regarding claim 24, Archer, Rigby and Perrone disclose using cleaning equipment comprising a soot blower (Archer at Fig. 5, ref. 4 and col. 7, line 55). It is noted that this limitation concerns apparatus structure and does not appear to be critical to the performance of the claimed method steps.

Regarding claim 25, Archer, Rigby and Perrone disclose using cleaning equipment comprising a steam based soot blower (Archer at col. 1, 41-45), which is a mechanical cleaner.

Regarding claim 26, Archer, Rigby and Perrone disclose the measuring step comprises measuring the mass flow of particles in the exhaust gas stream (Rigby at col. 1, lines 53-55).

Regarding claim 29, Archer, Rigby and Perrone disclose optimizing the operation parameters for the cleaning of different parts of the heat exchange surfaces by using the information of the fouling as a function of the location of the heat exchange surfaces (Archer at col. 3, lines 46-68 and col. 8, lines 6-30).

Regarding claim 30, Archer, Rigby and Perrone disclose the optimizing is based on a carbon content in the ash (Archer at col. 8, lines 1-5).

Regarding claims 31 and 32, Archer, Rigby and Perrone disclose using the information of the fouling as a function of the location of the heat exchange surfaces for estimating the tendency and distribution of fouling on the heat exchange surfaces (Archer at Fig. 5, especially ref. 10, 16 and 18 and col. 8, lines 10-50).

Regarding claim 33, Archer, Rigby and Perrone disclose measuring particles on a cross-section of an exhaust gas channel (Rigby at Fig. 2, and col. 3, lines 53 and 54), but do not explicitly teach measuring a particle distribution on a cross-section of an exhaust gas channel. However, the skilled artisan would have found it obvious to measure a particle distribution on a cross-section to further enhance the cleaning process since it is known that the distribution affects the particle deposition thickness for a given cross-section, which thickness and cross-section relationship is taught by Archer, Rigby and Perrone (Archer at col. 3, lines 46-66). Further, skilled artisan would have found it obvious to compare the measured data of the particle distribution with previous measurements and using the result of the comparison in determining the distribution and tendency of fouling on the heat exchange surfaces since Archer, Rigby and Perrone disclose using particle deposition comparison data for determining the

distribution and tendency of fouling on the heat exchange surfaces (Archer at Fig. 5, especially ref. 10 and 18 and col. 8, lines 10-50).

Regarding claim 34, Archer, Rigby and Perrone disclose the method wherein measuring of the amount and/or type of the released particles in the exhaust gas stream is made with an electric charge transfer measurement system (Rigby at col. 1, lines 36-40).

Regarding claim 35, Archer, Rigby and Perrone disclose producing AC and DC signals representing particles in the exhaust gas stream (Rigby at col. 6, line 57 to col. 7, line 3) by the electric charge transfer measurement system, but do not explicitly teach determining the tendency and distribution of fouling on the heat exchange surfaces by using the AC and DC signals. However, the skilled artisan would have found it obvious to determine the tendency and distribution of fouling on the heat exchange surfaces by using the AC and DC signals since Archer, Rigby and Perrone disclose that the signals are useful for indicating mass flow rate (Rigby at col. 6, lines 57-59), which is a factor in determining the distribution and tendency of fouling on the heat exchange surfaces.

Regarding claim 36, Archer, Rigby and Perrone disclose producing AC and DC signals by the electric charge transfer measurement system (Rigby at col. 6, line 57 to col. 7, line 3), but do not explicitly teach using the signals to estimate the amount of unburned carbon in the ash flow in the exhaust gas stream. However, the skilled artisan would have found it obvious to use the signals to estimate the amount of unburned carbon in the ash flow in the exhaust gas stream since Archer, Rigby and Perrone teach that ash analysis and an ultimate analysis (Archer at col. 8, lines 2-5),

which includes carbon, are factors in optimizing the cleaning (Archer at col. 8, lines 30-35).

7. Regarding claims 37 and 40, Archer teaches a system for cleaning heat exchange surfaces of a heat exchange system (abstract), comprising: cleaning equipment comprising a soot blower (Fig. 5, ref. 4 and col. 7, line 55), which is fully capable of being arranged to sequentially clean different parts of the heat exchange surfaces, so as to release particles from the cleaned parts of the heat exchange surfaces (col. 7, lines 44-47 and col. 8, lines 25-30);

Archer does not explicitly teach a means for measuring the amount and/or type of released particles and a means for liking together and storing in electronic memory the location information on parts of the heat exchange surface and particle measurement data. Rigby teaches a system for detecting particles in a gas flow (abstract), including a means for measuring the amount and/or type of released particles in the exhaust gas stream (Fig. 1, especially ref. 1, Fig. 2, especially ref. 6, 8 and 9, and col. 3, lines 17-55). It would have been obvious to one of ordinary skill in the art at the time of the invention to include a means for measuring the amount and/or type of released particles in the exhaust gas stream as per the system of the Rigby teaching in the system as per the Archer teaching in order to enhance the particle removal process control, since it is known that combustion gases contain particles which form undesirable deposits (Archer at col. 1, lines 23-40). The system as per the

Archer/Rigby teachings is fully capable of being used to create particle measurement data.

Archer and Rigby do not explicitly teach a means for liking together and storing in electronic memory the location information on parts of the heat exchange surface and particle measurement data. Perrone teaches a sootblowing optimization system (abstract) and discloses a means for linking together and storing in an electronic memory comprising a processor and database (col. 3, lines 54-64). It would have been obvious to one of ordinary skill in the art at the time of the invention to include a means for linking together and storing in an electronic memory as per the system of the Perrone teaching in the system as per the Archer/Rigby teachings since databases are known, widely available, and convenient for storing operating parameters or other data. The means for linking together and storing in an electronic memory as per the system of the Archer/Rigby/Perrone teachings is fully capable of being used to link together and store the location information of the parts of the heat exchange surface being cleaned and the particle measurement data created during the cleaning of the parts so as to create information of the fouling on the heat exchange surfaces.

Regarding claim 38, Archer, Rigby and Perrone disclose a means for detecting an operation parameter status of the cleaning equipment (Archer at Fig. 3, ref. 4 and 10 and col. 7, line 54-57 and col. 8, lines 10-14).

Regarding claim 39, Archer, Rigby and Perrone disclose a means for controlling the cleaning equipment on the basis of the information of the fouling on the heat

exchange surfaces (Archer at Fig. 3, ref. 4 and 10 and col. 7, line 54-57 and col. 8, lines 10-14).

Regarding claim 41, Archer, Rigby and Perrone disclose the system wherein the cleaning equipment comprises a steam based soot blower (Archer at col. 1, 41-45), which is a mechanical cleaner.

Response to Arguments

8. Applicant's arguments with respect to claims 1-20 (cancelled in the response of 5/5/2008 and concerning new claims 21-26 and 29-41) have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric Golightly whose telephone number is (571) 270-3715. The examiner can normally be reached on Monday to Thursday, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Kornakov can be reached on (571) 272-1303. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

EWG

/Michael Kornakov/

Supervisory Patent Examiner, Art Unit 1792